

ATTACHMENT 3 – WORK PLAN

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Work Plan Section 1 of 2 consists of the Background and Plan Context of the 2007 GBA IRWMP. The actual proposed Work Plan for the GBA IRWM Update is submitted as Work Plan Section 2 of 2.

Background and Plan Context

History

IRWM planning process that the IRWM planning effort has taken to date

In 2002, the State established the Integrated Regional Water Management Grant Program, administered by DWR and State Water Resources Control Board, to encourage communities to develop Integrated Regional Water Management Plans (IRWMPs) and better coordinate regional solutions to California's water resource issues. Development of these IRWMPs is incentivized by competitive grant applications to help fund implementation of projects that improve the state's water supply reliability, water quality, and the environment.

GBA member agencies share common traits and issues, including:

- Use of the same groundwater basin
- Primary water issues of declining water levels, and migration of naturally-occurring poor quality water, and storm water runoff
- Inadequate surface water resources
- Common geography
- Generally similar demographics

The Objective of this proposal is to develop the 2012 Eastern San Joaquin IRWMP Update. The Region's existing IRWMP was adopted in July 2007. The 2012 Update will:

- revisit and revise the 2007 Plan,
- bring the Plan up to current IRWM standards,
- increase outreach to disadvantaged and under-represented communities,
- develop additional technical information for projects of critical importance, and
- develop technical information on local elements of an inter-regional conjunctive use program being negotiated with the adjacent Mokelumne/Amador/Calaveras RWMG.



A separate application is being jointly prepared by the Eastern San Joaquin and Mokelumne/Amador/Calaveras RWMGs for facilitated development of governance and operations for the proposed inter-regional conjunctive use project.

Regional Water Management Group and Region

The Northeastern San Joaquin County Groundwater Banking Authority (GBA) is the Regional Water Management Group for the Eastern San Joaquin Region.

Through its Region Acceptance Process, DWR has accepted the Eastern San Joaquin Region as a Proposition 84 funding-eligible Region within the San Joaquin IRWM Funding Area.

Plan Status

The Eastern San Joaquin IRWM Plan was adopted in July 2007. A Program Environmental Impact Report on the Plan will be adopted in December or January 2010/2011.

Public process used to identify stakeholders

Public process used to identify stakeholders and how they were included in the planning and decision making process for the IRWM Plan

East San Joaquin IRWM Plan participants include 14 water agencies, 13 municipal and county agencies, six state and federal agencies, and over 14 community interest groups. These groups are listed in Table 1. All member agencies are represented on the GBA Board and Coordinating Committee, and each has an equal vote in the decision-making process.

The GBA and its past, present, and future IRWMP activities are supported through a Memorandum of Understanding (MOU) between the San Joaquin County Flood Control and Water Conservation District and the DWR Conjunctive Water Management Branch. Through this MOU, DWR has been able to provide facilitation services through the Center for Collaborative Policy, in-kind technical services through the DWR Central District, and funding for studies to further the goal of developing locally supported conjunctive use projects providing benefit to the San Joaquin Region and beyond.

The primary GBA focus is on mitigating conditions of groundwater overdraft. However, the integrated regional planning efforts purposefully include outreach efforts pre- and post-IRWMP that consider a broader range of integrated water management strategies that span beyond the Regional Water Management Area. Examples of the broad inclusion of stakeholder groups in the planning process include:

- The South Delta Water Agency and Central Delta Water Agency are voting members of the GBA Board of Directors, although Sacramento-San Joaquin Delta issues are not the focus of the GBA. The cooperation and collaboration at the GBA Board level has allowed for a recognition and sensitivity to Delta-related issues and a realization that a



healthy sustainable economy for San Joaquin County must include both a sustainable Delta and a healthy groundwater basin.

- The Tracy Sub-Basin is distinctly different from the Eastern San Joaquin in terms of hydrodynamics and geochemical composition. The Tracy Sub-basin, in sharp contrast to the Eastern San Joaquin, has relatively high groundwater levels; however, the water quality there is poor and often exceeds State standards for salinity. On March 6, 2007, the City of Tracy adopted the Tracy Regional Groundwater Management Plan (Tracy GWMP) for the entire Tracy Sub-Basin. GBA staff participated as stakeholders in the development of the Tracy GWMP and will continue to coordinate future groundwater management actions.
- GBA member agencies are also participants in the Mokelumne River Forum which is a stakeholder group representing water, recreational, and environmental interests of the Mokelumne River watershed.
- There are significant, on-going discussions with the Mokelumne Forum and the Mokelumne/Amador/Calaveras Group (see IRWMP Chapter 8, Inter-Regional Integration). Work Plan Task 5 of this application will further describe Eastern San Joaquin Region facilities and operations for the inter-regional Integrated Regional Conjunctive Use Project (IRCUP). The MAC group is including a similar task in its planning application for facilities and operation in the MAC region. The Eastern San Joaquin and MAC groups are also jointly applying for an Inter-Regional IRWM Planning Grant defining additional efforts to further develop the inter-regional Integrated Regional Conjunctive Use Project (IRCUP).
- There has been a concerted effort to contact all communities and groups within the Plan area. GBA meetings are open to all, with meeting agendas and minutes posted on the internet at www.gbawater.org.
- The GBA has recently completed a Program EIR on the Eastern San Joaquin IRWM Plan in accordance with CEQA. The GBA held two scoping meetings which were open to the public prior to drafting the EIR. Through the EIR process, the GBA worked to educate a broader range of stakeholders on the ICU Program and IRWMP effort. The Program EIR is scheduled to be adopted in Winter 2010.
- The IRWMP incorporates all required elements of an Integrated Regional Water Management Plan (IRWMP p.1-7). The development of the IRWMP and associated Program EIR were public processes that included open meetings with posted agendas and minutes and noticed public hearings.



- All urban water agencies within the Regional Water Management Area subject to the Urban Water Management Planning Act have current Urban Water Management Plans (UWMP) that were reviewed and incorporated into the IRWMP. The publication and adoption of the UWMPs are noticed, public processes.
- In 2004, the GBA adopted the Eastern San Joaquin Groundwater Basin Groundwater Management Plan which was also developed and adopted pursuant to public processes including open meetings with posted agendas and minutes and noticed public hearings.
- San Joaquin County and the incorporated cities have adopted General Plans. General Plan updates and amendments and Public Facilities Element amendments are developed through public processes with participation by GBA member agencies and GBA staff.
- Significant public outreach efforts were made during development of the IRWMP. These efforts involved evaluation of questionnaires, and conducting meetings with individuals, groups, agencies, and a Coordinating Committee. The GBA met regularly during development of the Integrated Regional Water Management Plan, reviewing and providing comments and suggestions on the Plan.
- The San Joaquin County Farm Bureau has been welcomed in to the GBA as a non-voting, non-dues paying associate member.
- Outreach efforts were directed at stakeholders from local water agencies, state and federal agencies, municipalities, adjacent County agencies, and local community groups. A list of stakeholder groups involved in the Plan process is included as Table 1.

IRWMP Management Actions (IRWMP Chapter 9) related to planning and stakeholder involvement include:

- GBA will provide information regarding regional water balances and availability of supplemental supply to local purveyors to allow them to reach appropriate conclusions regarding the sufficiency of supply for SB 221 and SB 610 assessments.
- GBA will work with local planning agencies to ensure that areas that should be set aside to recharge the groundwater basin are reserved for that purpose and are not subject to development.
- GBA will coordinate with local planning agencies to ensure that growth projections, proposed land use changes, and types of proposed developments are consistent with water planning efforts, as required by SB 221 and SB 610. Significant deviations from projected growth and water needs will be noted and corrective action taken. Corrective actions could include securing additional sources of water, or making a finding pursuant



to SB221 or SB 610 that an adequate water supply does not exist and notifying the water purveyor.

- GBA will work with local water purveyors and serve as a clearinghouse for water conservation measures and performance data. Water conservation programs will be evaluated and actions taken as needed.
- Increased water conservation efforts will be identified and plans developed for implementation of cost-effective demand management measures based on the reports on effectiveness.
- GBA will continue to develop and publish its newsletter which highlights GBA messages, meetings, accomplishments, efforts, and contemporary water management issues.
- GBA will maintain its Speakers Bureau to provide timely water related information to the public.
- GBA's web site (<http://www.gbawater.org>) will continue to present information on GBA projects, water supplies and resources, water education, Agency publications, a calendar of events, meeting agendas, and general information about GBA.



Table 1 - Eastern San Joaquin IRWMP Participants

Participating Entity	Groundwater Banking Authority Member	GBA Coordinating Committee	Statutory Authority over Water Supply or Water Management	Basis and Nature of Authority
Water Agencies				
Amador Water Agency			X	Retail water agency, Regional water partnership
Calaveras Public Utility District			X	Retail water agency, Regional water partnership
California Water Service Company	X	X	X	Retail water agency
Central Delta Water Agency	X	X	X	Wholesale water agency
Central San Joaquin Water Conservation District	X	X	X	Retail water agency
Contra Costa Water District			X	Retail water agency
Jackson Valley Irrigation District			X	Retail water agency, Regional water partnership
North San Joaquin Water Conservation District	X	X	X	Retail water agency
San Joaquin County Flood Control and Water Conservation District	X	X	X	County government; Flood management agency
San Joaquin Farm Bureau Federation ¹	X	X		Industry group; Community organization
South Delta Water Agency	X	X	X	Wholesale water agency
South San Joaquin Irrigation District		X	X	Retail water agency
Stockton East Water District	X	X	X	Wholesale and retail water agency
Woodbridge Irrigation District	X	X	X	Retail water agency
Municipalities and County Government				
Alpine County			X	Regional water partnership
Amador County			X	Regional water partnership
Calaveras County			X	Regional water partnership
City of Escalon			X	Wastewater agency
City of Lathrop			X	Wastewater agency
City of Lodi	X	X	X	Retail water agency; Wastewater agency; Municipal power
City of Manteca		X	X	Retail water agency; Wastewater agency
City of Ripon			X	Wastewater agency
City of Stockton	X	X	X	Retail water agency; Wastewater agency
Mokelumne River Water and Power Authority		X	X	Regional water partnership
San Joaquin Area Flood Control Association			X	Flood management agency
San Joaquin County		X	X	County government ² ; Wastewater agency; Flood management agency; Stormwater management; Well permitting
Stanislaus County			X	Regional water partnership
State and Federal Agencies				
California Department of Water Resources		X	X	State agency; CWMB MOU
Lawrence Livermore Lab				Federal agency
Natural Resource Conservation Service				Federal agency
U.S. Army Corps of Engineers				Federal agency
U.S. Geologic Survey		X		Federal agency
US Bureau of Reclamation				Federal agency
Miscellaneous Community Interests				
Contra Costa Water District			X	Retail water agency
East Bay Municipal Utility District		X	X	Retail water agency
Galt Economic Development Task Force				Community organization
Great Valley Center				Community organization
Mokelumne/Amador/Calaveras (MAC) Association				Inter-regional water management group
Mokelumne Forum				Inter-regional water management group
Morada Area Association		X		Community organization
Office of Assemblyperson Barbara Matthews				Representative
Office of State Senator Charles Poochigian				Representative
Pacific Gas and Electric				Electrical corporation
Restore the Delta				Community organization
Sierra Club				Environmental group
Stockton Area Water Suppliers			X	Water management group
Stockton Chamber of Commerce				Industry organization

¹ Associate Member² County is Responsible for Special Districts except for Lockeford and Linden who self govern.

Disadvantaged Communities

The process used to identify the region's DACs and how the Applicant engaged them in the IRWM Planning process

A disadvantaged community is defined as a community with an annual mean household income (MHI) less than 80% of the statewide MHI. According to the 2000 Census data, 80% of California's statewide annual Median Household Income (MHI) is \$37,994.

MHI and population data assembled from the Census data for San Joaquin County show a total population of approximately 491,361 with a total of 160,532 households within the Regional Planning Area. 72,522 of those households are in disadvantaged census blocks. Disadvantaged communities by census tract¹ are shown in Figure 1.

San Joaquin County Demographics, 2000 Census

Population	491,361
Households	160,532
Persons/Household	3.1
Households in Disadvantaged Census Tracts	72,522
Percent of Households in Disadvantaged Tracts	45%

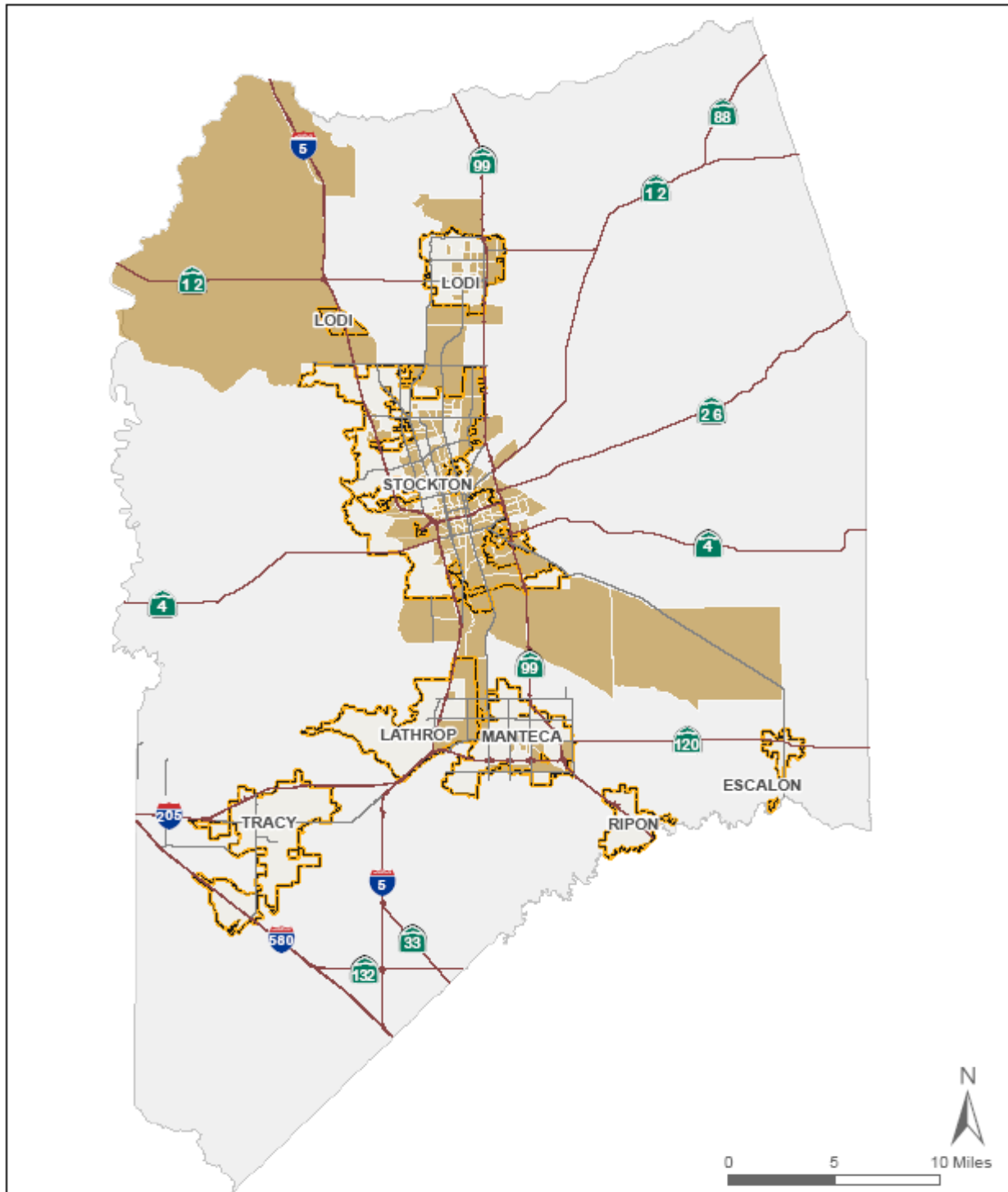
Considerable portions of the regional planning area meet the definition of Disadvantaged Communities (DACs). Disadvantaged Community areas are located in:

- major portions of Thornton and Walnut Grove
- areas located in the central and eastern portions of the City of Lodi
- neighborhoods in the City of Stockton mostly located in central and eastern regions
- throughout eastern Lathrop
- southeastern Manteca

DACs are represented on the GBA Board of Directors through members appointed from the Lodi and Stockton City Councils. The GBA Board is also chaired by a member of the San Joaquin County Board of Supervisors.

¹ Analysis of Census 2000 spatial and statistical data was compiled by the San Joaquin County Public Works Department Geographical Information System Division.



Figure 1 - Disadvantaged Communities by Census Tract

The GBA employs specific mechanisms to assist DACs and to encourage their participation in the IRWMP Update process. Regular GBA meeting locations will be maintained with publicly-noticed meetings sent via e-mail lists and posted on the GBA website. Participation in the

collaborative process will continue to be allowed regardless of the ability to contribute financially to the Plan.

Tribes

Government Code² requires local governments to consult with California Native American Tribes identified by the Native American Heritage Commission (NAHC) for the purpose of protecting, and/or mitigating impacts to cultural places. The GBA has contacted NAHC and have received a list of tribal representatives for the region. There are no tribal reservations or facilities within the Eastern San Joaquin Region.

Water-related Objectives and Conflicts

The process used to identify the regions' water related objectives and conflicts

The GBA has employed a consensus-based approach in its goal to develop "...locally supported conjunctive use projects that improve water supply reliability in San Joaquin County...and provide benefits to project participants as a whole."

The GBA and its past, present, and future IRWMP activities are supported through a Memorandum of Understanding (MOU) between the San Joaquin County Flood Control and Water Conservation District and the DWR Conjunctive Water Management Branch. Through this MOU, DWR has been able to provide facilitation services through the Center for Collaborative Policy, in-kind technical services through the DWR Central District, and funding for studies to further the goal of developing locally supported conjunctive use projects providing benefit to the San Joaquin Region and beyond.

The GBA is governed by a Board composed of representatives of all member agencies. Technical oversight is provided by a Coordinating Committee. The Coordinating Committee is comprised of GBA member agency representatives and GBA staff and serves in an advisory capacity to the GBA Board of Directors. Input from other stakeholders and interested parties were welcomed during the development of the IRWMP. Continued collaboration and participation is a major focus for the implementation of the IRWMP and any future IRWMP updates.

GBA member agencies serve as project proponents for ICU Program actions and projects. Member agencies will be able to tier off of the ICU Program EIR when preparing project specific environmental impact disclosure documents. This approach to looking at conjunctive water management in Eastern San Joaquin County has enabled projects and project proponents to integrate and collaborate rather than develop projects in a competitive local atmosphere.

² PRC §75102



The IRWMP was prepared in three phases with input from the GBA Coordinating Committee and other stakeholders convened as the IRWMP advisory panel. The charges given to the GBA Coordinating Committee were to:

- review and revise, as necessary, previous estimates of water supply and demand
- identify and solicit input from stakeholders with interest in long-term reliable water supplies for the region, and
- identify a suite of preliminary alternatives that will help GBA achieve its goals in water supply management for the next two decades. Proposed projects and management actions are tailored to address at least one key water management issue in the basin

Mission Statement

The Mission of the GBA is to employ a consensus-based approach to collaboratively develop stakeholder-supported projects and programs that mitigate and prevent the impacts of long-term groundwater overdraft. Managing the underlying groundwater basin is critical in providing reliable water supplies, which are essential for the economic, social, and environmental viability of the San Joaquin Region. Developing and implementing an IRWMP is key to carrying out this Mission.

Objective

As described in Chapter 5 of the IRWMP, the objective for the IRWM Plan was developed by the GBA to address the underlying issues listed above, consistent with the Plan Purpose. The Objective statement adopted by the GBA is as follows:

- It is the Objective of the GBA to: Ensure the long-term sustainability of water resources in the San Joaquin Region while:
- Equitably distributing benefits and costs;
- Minimizing adverse impacts to agriculture, communities, and the environment;
- Maximizing efficiency and beneficial use of supplies; and,
- Protecting and enhancing water rights and supplies.

The following **Problem Statement**³ was developed in this process:

Long-term groundwater overdraft due to lack of sufficient surface water supplies and long-term reliance on groundwater threatens the social, economic, and environmental viability of the San Joaquin Region. Without action, groundwater levels will continue to decline resulting in saline groundwater intrusion from the west, reduction in groundwater quality due to elevated nitrates and salts, increased pumping costs,

³ IRWMP p.5-1

increased seepage losses from local rivers and streams, increased lateral inflow from neighboring sub-basins, and other potentially devastating groundwater and surface water impacts.

The related **Purpose Statement**⁴ developed states:

The Purpose of the Eastern San Joaquin IRWMP is to define and integrate key water resource strategies and to establish the protocols and course of action for implementation of the Eastern San Joaquin Integrated Conjunctive Use Program (ICU Program). The ICU Program is a comprehensive prioritized menu of projects and actions that fulfills the Mission of the Authority.

Chapter 5 of the IRWMP provides a detailed list of the **stakeholder issues and Community Values** developed from the previously developed Groundwater Management Plan (2004), the Countywide Water Management Plan (2002), and the Mokelumne Aquifer Recharge and Storage Project (1996), and individual and group meetings.

This process identified the key issues that stakeholders have expressed as central to the IRWMP and were addressed by the IRWMP or considered in its development. The following 17 key water management issues emerged as a result of this process:

- Groundwater overdraft
- Saline groundwater intrusion
- Degradation of groundwater quality
- Subsidence and irrecoverable basin storage capacity
- Environmental quality of the community
- Health of the Sacramento-San Joaquin Delta
- Supply reliability during multi-year droughts
- Competing urban, agricultural, and environmental water demands
- Planned urban growth
- Recreational opportunities and access
- Expansion of agriculture into historically non-irrigated areas
- Groundwater management and governance
- Sustainability of economies dependant on sufficient water supplies of adequate quality
- Limited opportunities to develop new surface water sources
- Complexity of cooperation involving numerous local, regional, State, and Federal agencies
- Flood protection
- Funding and financing

⁴ IRWMP p.5-2

The **Community Values** that the GBA developed that are central to the **performance measures and evaluation criteria** for conjunctive use projects developed in the Eastern San Joaquin Region are as follows:

- Be implemented in an equitable manner
- Maintain or enhance the local economy
- Protect groundwater and surface water quality
- Be affordable
- Minimize adverse impacts to entities within the County
- Provide more reliable supplies
- Exhibit multiple benefits to local land owners and other participating agencies
- Maintain overlying landowner and Local Agency control of the Groundwater Basin
- Restore and maintain groundwater resources
- Minimize adverse impacts to the environment, community, and culture
- Protect the rights of overlying land owners
- Increase amount of water put to beneficial use within the San Joaquin region
- Support beneficial conservation programs

The GBA met approximately twice a month during the two-year IRWM planning period. Summaries from these meetings and other GBA Coordinating Committee/GBA Board of Director Meetings are published on the GBA's website at www.gbawater.org.

In the IRWMP, four ICU Program Alternatives were developed to address declining groundwater levels and degradation of groundwater quality near the Delta. All four ICU Program Alternatives are analyzed in a Program Environmental Impact Report in accordance with the California Environmental Quality Act (CEQA). The ICU Program Final EIR is scheduled to be certified in December 2010 or January 2011.

Inter-Regional Collaboration

The GBA has defined a **Regional Integration Area** as that portion of the state that may influence, provide guidance to or contribute to the IRWMP. Stakeholders outside of the IRWM planning area involved in regional integration planning with the GBA include:

- Alpine County
- Amador County Water Agency
- Calaveras County Water District
- Calaveras Public Utility District
- East Bay Municipal Utility District
- Mokelumne/Amador/Calaveras (MAC) Association
- Mokelumne Forum
- Mokelumne River Water and Power Authority



- South Sacramento
- Stanislaus County

Regional Priorities

The process used to determine criteria for developing regional priorities

The GBA has an established process for prioritizing projects that was developed in a collaborative, open forum where stakeholders and the public were included. This process has further evolved as projects identified in the IRWMP have moved toward implementation. The process is documented, and includes guidelines and criteria, expressed in plain language, that are understandable for regional stakeholders and the public.

The application of the adopted Performance Measures provided an unranked list of project alternatives. Though it is possible that a single alternative could rank the highest for all Performance Measures, it was found that all alternatives received a mixed ranking (e.g. Alternative X provides the most high - quality water, but is twice as expensive as Alternative Y). For this portion of IRWMP development, Prioritization Criteria were developed with the GBA Board and Coordinating Committee to select the best projects or alternatives to develop. Adopted Prioritization Criteria are presented in Table 1⁵.

Table 1 - Prioritization Criteria

- | |
|--|
| <ol style="list-style-type: none"> 1. Need 2. Feasibility <ul style="list-style-type: none"> • Technical • Ability to phase • Institutional 3. Readiness to Proceed <ul style="list-style-type: none"> • Water Rights • Engineering • Identified Financing • Environmental Documentation 4. Public and Stakeholder Acceptance |
|--|

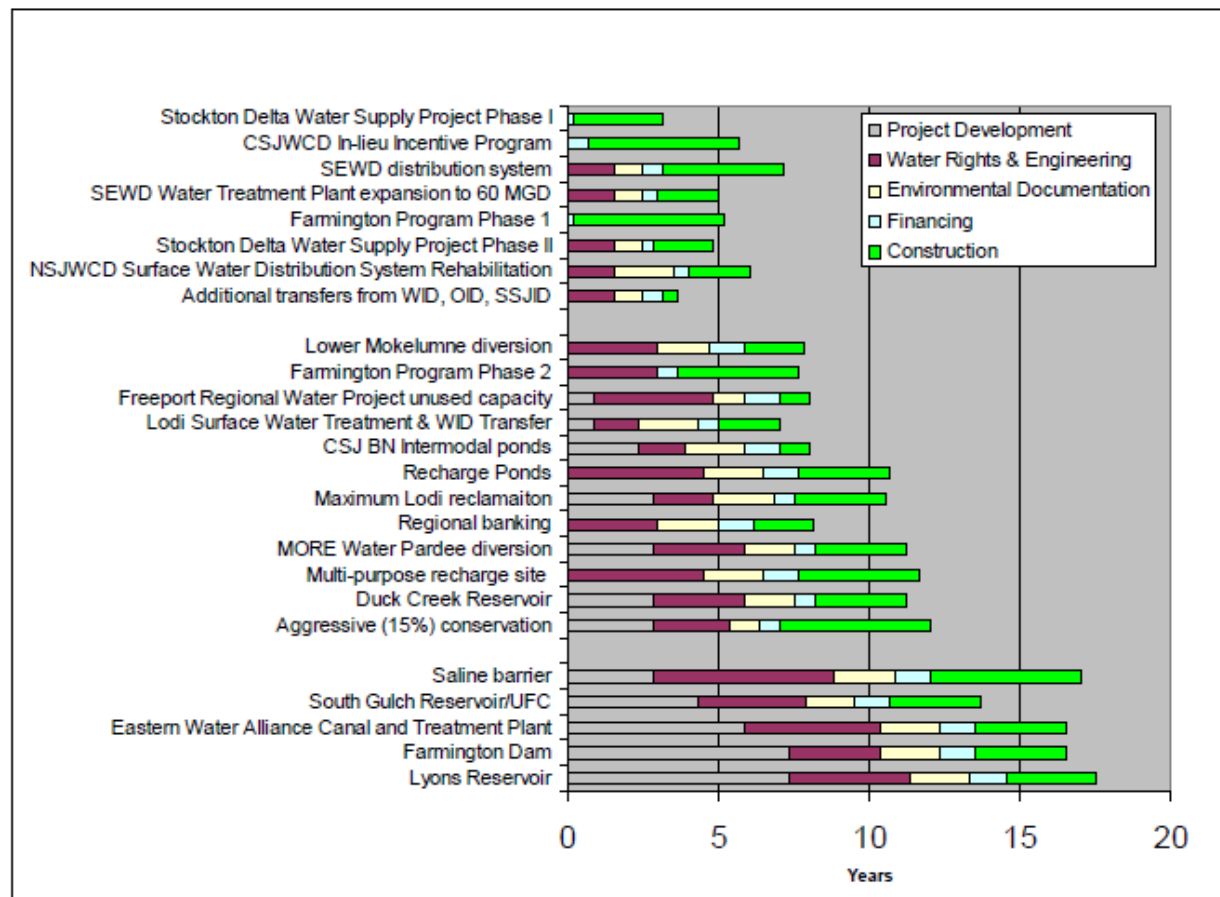
Projects are prioritized collaboratively using the process. Stakeholders and the public are able to review the ranking and see an explanation of the ranking. All projects under consideration must satisfy Plan Objectives and present a wise investment for regional and State funding. This an important step in the IRWMP process, and will be continued in an open, transparent process during the Plan Update.

⁵ GBA 2007 IRWMP, Table 7-3



The prioritized project list and associated implementation timeline is presented as Figure 2⁶.

Figure 2 - Prioritized Project Implementation Timeline



Data management and technical analysis

The data and technical analysis collected/performed and how that data is managed

The GBA has numerous data management systems existing or in development to support its various monitoring programs. It is imperative that the GBA continue to implement a data management system as a means to store, archive, and access data in a timely, unambiguous way meaningful to decision makers.

In 2004, the GBA adopted the Eastern San Joaquin Groundwater Basin Groundwater Management Plan which describes, in detail, the San Joaquin County Groundwater

⁶ GBA 2007 IRWMP, Figure 7-37

Data Center. The online viewer for the San Joaquin County groundwater Data Center is located at www.sjwater.org

The GBA compiles records of producers, production wells, and annual production. DWR maintains a database to store river flow, water quality and water level data collected by the County, USGS, and water agencies. Significant additional information is anticipated to be collected as part of this Plan to better characterize the groundwater system and the performance of recharge projects⁷.

The 2007 IRWMP includes seven adopted Management Actions related to data management as follows:

- 1. Action:** GBA will continue development of a data management system based on a relational database structure to efficiently compile, store, archive, and access collected data. The system will be designed to provide data for a geographic information system and to accommodate data from additional collection efforts developed through implementation of this Plan⁷.
- 2. Action:** GBA will make compiled data available to local water suppliers⁷.
- 3. Action:** GBA will expand its aquifer characterization program to improve understanding of basin conditions, leading to more effective recharge project operations. Geophysical methods will be employed as appropriate to identify the sites most appropriate for groundwater recharge⁸.
- 4. Action:** GBA will expand its monitoring well network as appropriate to track aquifer response from pilot and full-scale groundwater recharge and production facilities⁸.
- 5. Action:** Data collected will be compatible and integrated with regional modeling and data management efforts⁸.
- 6. Action:** GBA will continue water quality monitoring efforts and will collect and summarize drinking water quality data from cities, coordinating these efforts with other entities including USGS, the State Department of Health Services, the Central Valley Regional Water Quality Control Board, the State Department of Water Resources, and others. GBA will explore the viability of acting as a regional clearinghouse for this data. Data will be compiled, compared and tracked in a data

⁷ GBA 2007 IRWMP, 9.2.1.7 Data Management

⁸ GBA 2007 IRWMP, 9.2.2.2 Aquifer Characterization



management system. All data will be made available to area water purveyors. Needs for additional water quality sampling will be determined⁹.

- 7. Action:** GBA will coordinate with regional water quality agencies, including the U.S. EPA, California EPA, Central Valley RWQCB, the California Department of Health Services, and San Joaquin County Environmental Health Services to identify potential water quality threats to candidate recharge sites, and compile this information into a data management system for use in selection of recharge sites¹⁰.

Further studies and monitoring methods are necessary to ensure the problem is addressed and monitored adequately. In 2003, the United States Geological Survey (USGS), DWR and the GBA embarked on a 5-year, \$2.7 million, study of the saline intrusion crisis. The purpose of the Study is to quantify the source, aerial extent, and vertical distribution of high-chloride groundwater and the sources, distributions, and rates of recharge to aquifers along selected flow paths in Eastern San Joaquin County.

The work done by the USGS thus far has been focused on identifying the sources of chloride using traditional and cutting edge sampling and geochemical characterization techniques. The USGS has compiled an extensive water level and water quality geographical information system (GIS) consisting of over 4000 wells throughout the Region. Historic water quality samples have shown that over time, an increasing number of wells have shown an increase in salinity concentrations.

In 2006, the USGS published Open File Report 2006-1309 which identified the sources of High-chloride groundwater in Eastern San Joaquin County. The report concluded that a possible source of elevated chloride levels in shallow wells at depths less than 100 ft bgs can be attributed to irrigation return and San Joaquin River accretions and is evident in evaporative history of samples. Another source of high-chloride water is the mobilization of ancient sea water entrained during which shows a distinct marine history consistent with the deposition history of the Delta. It is also possible that either prolonged pumping and improperly destroyed oil and gas wells have catalyzed the migration of these entrained sources of chloride.

Integrated Resource Management Strategies / IRWM Plan Implementation

How integrated resource management strategies will be employed

How the IRWM Plan will be implemented

The 53 **Management Actions** listed in Chapter 9 of the IRWMP constitute the Groundwater Banking Authority's plan and pledge to employ water management strategies and

⁹ GBA 2007 IRWMP, 9.2.1.2 Water Quality

¹⁰ GBA 2007 IRWMP, 9.2.4.1 Recharge Site Management Activities



implement the Integrated Regional Water Management Plan. Management Actions have been grouped into the following categories:

- **Monitoring** – Monitoring of water parameters such as water levels, water quality, import quantities, water budgets, etc., plus monitoring of population growth and development, effectiveness of water conservation measures, and land subsidence. Data management will be closely tied to this function.
- **Improved Basin Characterization** – Continued exploration, infiltration rate testing, aquifer characterization, modeling, improvements to understanding of the water budget.
- **Continued Long-Term Planning** – Includes review of land use plans, additional water supply identification, and Plan updates.
- **Groundwater Protection** – This category could include recharge site management, identification and destruction of abandoned wells, hazardous material response, protection of recharge areas.
- **Construction and Implementation** – Identification of implanting agencies for high priority projects, and coordinate with those agencies in putting them into service.
- **Governance** – Development of regional governance structures to acquire water supplies, manage the groundwater basin, and equitably distribute benefits and costs.
- **Financing** – Implementing the IRWM Plan will require an array of financing mechanisms such as bonds, grants, or low interest loans. Some implementing agencies have available revenue streams for implementing projects, while others do not. Cost savings may be incurred through implementation of conservation and water reuse projects. In addition, cooperative funding agreements between the GBA and local, state, or federal agencies may also provide funding for IRWM Plan projects and management actions.
- **Public Participation/Community Outreach** – Continued coordination with the GBA Board and Coordinating Committee, the San Joaquin County Advisory Water Commission, as well as regional water managers and community groups.

Expected Impacts and Benefits

What impacts and benefits are expected

The GBA is the forum that fosters regional integration amongst member agencies and with other regional participants. The GBA will continue to interact with other agencies and groups throughout the region to increase the social, economic, and environmental viability of the Region



and beyond. This integration of these strategies increases the potential for broad-based support by spreading benefits to multiple interests and agencies. Integration also produces synergistic effects and makes additional funding sources available.

Benefits and impacts were studied extensively and documented in the 2007 IRWMP and in the 2010 Program EIR on the Plan.

Benefits quantified in the 2007 IRWMP and 2010 Program EIR include:

- Balancing long-term water demands with available and supplemental water supplies
- Increased water supply reliability and sustainability
- Reduced water demand
- Increased water supply
- Stabilized groundwater basin water table elevations, managed within a historically acceptable operating band
- Coordinated and integrated water supply and stormwater management operations
- Increased flood control capability
- Improved operational efficiency
- Improved water quality
- Groundwater quality protection
- Improved resource stewardship
- Integration with land use planning
- Improved regional governance
- Inter-regional water management and cooperation
- An inclusive, integrated planning process incorporating a wide range of planning processes including land use, flood control, and energy use
- Scalable implementation

Impacts quantified in the 2007 IRWMP and 2010 Program EIR include:

- Surface Water Resources,
- Groundwater Resources,
- Flooding and Drainage,
- Biological Resources,
- Land Use and Agricultural Resources,
- Cultural Resources,
- Geology and Soils,
- Public Services and Utilities,
- Recreation,
- Aesthetics,



- Air Quality,
- Hazards, Hazardous Materials, Public Safety,
- Noise,
- Traffic and Transportation,
- Growth Inducement,
- Cumulative Impacts,
- Construction-related impacts, and
- Climate Change.

The GBA has adopted unbiased performance and prioritization criteria for developing and implementing projects and actions, and has defined and is implementing monitoring protocols to gauge Plan success. The Program EIR also commits the GBA to environmental monitoring, mitigation and reporting measures associated with implementing the IRWM Plan.

A process was developed for determining the impacts and benefits of the plan development and implementation as well as complying with the California Environmental Quality Act as it is applicable to adoption and implementation of the Plan. This is described as a work item below.

Meeting IRWM Plan Standards

For an existing IRWM Plan, describe how that plan meets the current IRWM Plan standards

The Eastern San Joaquin IRWM Plan was developed to meet all IRWM Plan standards as of 2007, plus inclusion of the new standards suggested by the 2006 Regional Water Management Act (Proposition 84).

The IRWM Plan identifies and addresses major water-related objectives and conflicts within the region, and considers all of the resource management strategies identified in the California Water Plan. The management strategies considered and/or included in the Plan are summarized in Table 23.

The Plan uses an unbiased, integrated, multi-benefit approach to project selection, design, and prioritization. The Plan includes performance measures and monitoring to document progress toward meeting plan objectives.

The adopted Plan, once implemented, will provide multiple benefits, and includes the following project elements:

- Water supply reliability, water conservation and water use efficiency.
- Storm water capture, storage, and management.
- Acquisition, protection, and restoration of open space and watershed lands.
- Groundwater recharge and management projects.



- Contaminant and salt removal through reclamation, desalting, and other treatment technologies and conveyance of reclaimed water for distribution to users.
- Water banking and exchange, and improvement of water quality.
- Drinking water treatment and distribution.
- Ecosystem and fisheries protection.

Table 2 - Resource Management Strategies Considered in the 2007 IRWMP

Resource Management Strategies Identified in the California Water Plan (Bulletin 160-05, December 2005)			
Strategy #	Strategy Considered	Included in IRWMP	Notes
1	Agricultural Lands Stewardship	Considered	Does not address Plan objectives
2	Agricultural Water Use Efficiency	Yes	
3	Conjunctive Management and Groundwater Storage	Yes	Recharging aquifers for conjunctive management of surface and groundwater supplies is key element of Plan
4	Conveyance	Yes	New pipelines, tunnels, canals, and on-farm distribution systems
5	Desalination	Considered	Not practical for region
6	Drinking Water Treatment and Distribution	Yes	
7	Economic Incentives (Loans, Grants, and Water Pricing)	Yes	
8	Ecosystem Restoration	Yes	
9	Floodplain Management	No	
10	Groundwater Remediation/Aquifer Remediation	Yes	Saline intrusion project
11	Matching Water Quality to Water Use	Yes	
12	Pollution Prevention	Yes	
13	Precipitation Enhancement	Considered	Not practical for region
14	Recharge Areas Protection	Yes	
15	Recycled Municipal Water	Yes	
16	Surface Storage—CALFED	Considered	
17	Surface Storage—Regional/Local	Yes	
18	System Reoperation	Yes	
19	Urban Land Use Management	Yes	
20	Urban Runoff Management	No	
21	Urban Water Use Efficiency	Yes	
22	Water Transfers	Yes	
23	Water-Dependent Recreation	Yes	
24	Watershed Management	Yes?	
Other Resource Management Strategies			
25	Crop idling for water transfers	Considered	
26	Dewvaporation	No	Not practical for region
27	Fog collection	No	Not practical for region
28	Irrigated land retirement	Yes	
29	Rainfed agriculture	No	Not practical for region
30	Waterbag transport/storage technology	No	Not practical for region
Other Resource Management Strategies Not Included in California Water Plan			
31	Water Supply Reliability	Yes	
32	Regional Groundwater Banking Partnerships	Yes	
33	Imported water	Yes	
34	Land use planning	Yes	

Agency Coordination

Water users in the Region have worked together for years in various arenas. Coordination and cooperation is demonstrated by long-term functional governance such as the GBA Board and Coordinating Committee, the San Joaquin County Advisory Water Commission (AWC), the Mokelumne River Water and Power Authority, the Mokelumne Forum, and the Stockton Area Water Suppliers (SAWS). The successful formulation of the GBA and its recognition as a regional entity shows the region's desire to work closely together on water planning issues.

The IRWMP Update process will be structured to allow and encourage continued effective coordination between planning efforts. The plan integration process will:

- Ensure other planning agencies participate as stakeholders in the IRWMP. This would mean not just inviting, but actively encouraging participation
- Seek common objectives between planning efforts where possible
- Collect a wide range of water planning-related information that can be shared by agencies
- Look for joint or integrated strategies between plans
- Tier or coordinate actions between agencies so they complement each other and address mutual objectives
- Look for duplication in planning efforts and minimize them
- Incorporate agencies as funding partners where strategies align
- Check back with agencies after compilation of the IRWMP Update to ensure no conflicts exist
- Adopt follow-on Management Actions, similar to those adopted in the 2007 IRWMP, that the GBA and member agencies commit to following.
- Monitor and audit progress of Plan implementation regularly, and update the Plan as needed.

